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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/576,107	04/18/2006	Kiminori Mizuuchi	2006_0568A	1714

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WENDEROTH, LIND & PONACK L.L.P.  
2033 K. STREET, NW  
SUITE 800  
WASHINGTON, DC 20006

EXAMINER
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HAGAN, SEAN P

ART UNIT	PAPER NUMBER
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2828

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10/18/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/576,107	<b>Applicant(s)</b> MIZUUCHI ET AL.	
	<b>Examiner</b> Sean Hagan	<b>Art Unit</b> 2828	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 18 April 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 22-45 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 22-45 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>18 April 2006</u> . | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. Claims 1 through 21 originally filed 18 April 2006. Claims 1 through 21 cancelled by preliminary amendment. Claims 22 through 45 added by preliminary amendment. Claims 22 through 45 are pending in this application.

### ***Specification***

2. Applicant is reminded of the proper content of an abstract of the disclosure.
3. A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.
4. The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.
5. Where applicable, the abstract should include the following:
  - (1) if a machine or apparatus, its organization and operation;
  - (2) if an article, its method of making;

(3) if a chemical compound, its identity and use;

(4) if a mixture, its ingredients;

(5) if a process, the steps.

6. Extensive mechanical and design details of apparatus should not be given.

7. The abstract of the disclosure is objected to because it compares itself to the prior art. Correction is required. See MPEP § 608.01(b).

***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 22, 23, 24, 25, 29, 31, 32, 33, 34, 35, 36, 38, and 42 rejected under 35 U.S.C. 102(b) as being anticipated over Bischel et al. (Bischel, US Patent 5,499,256).

10. ***Regarding claim 22***, Bischel discloses, "A wide stripe semiconductor laser" (col. 17, lines 23-25). "A mode converter for beam shaping the light emitted from the semiconductor laser" (col. 17, lines 40-45). "A single-mode waveguide to which the light from the semiconductor laser is coupled through the mode converter" (col. 18, lines 30-35). "A wavelength selecting filter that feeds back part of the light transmitted by the single-mode waveguide to the active layer of the semiconductor laser" (col. 21, lines 14-

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25). "Wherein the oscillation mode of the semiconductor laser is limited by the light that has been fed back" (col. 17, lines 40-55).

11. **Regarding claim 23**, Bischel discloses, "Wherein part of the light coupled to the single-mode waveguide is also reflected at the exit end face of the single-mode waveguide and fed back to the active layer of the semiconductor laser" (col. 17, lines 40-55).

12. **Regarding claim 24**, Bischel discloses, "Wherein the wavelength selecting filter includes a band pass filter and a reflector" (col. 21, lines 14-25). "Light that has been transmitted by the single-mode waveguide goes through the band pass filter" (col. 21, lines 14-25). "Then part of it is reflected by the reflector and fed back to the active layer of the semiconductor laser" (col. 17, lines 40-55).

13. **Regarding claim 25**, Bischel discloses, "Wherein the band pass filter and the reflector are formed integrally with the single-mode waveguide as a Bragg reflection grating" (col. 21, lines 14-25).

14. **Regarding claim 29**, Bischel discloses, "Wherein the mode converter is a tapered waveguide" (Fig. 8).

15. **Regarding claim 31**, Bischel discloses, "Wherein the single-mode waveguide has a periodic polarization inversion structure" (col. 9, lines 38-56). "Part of the light from the semiconductor laser is subjected to wavelength conversion by the polarization inversion structure" (col. 9, lines 38-56).

16. **Regarding claim 32**, Bischel discloses, "A wide stripe semiconductor laser" (col. 17, lines 23-25). "A tapered waveguide having an incident end face to which light from the semiconductor laser is coupled" (Fig. 8). "A single-mode waveguide formed on the exit end face side of the tapered waveguide" (col. 18, lines 30-35). "A band pass filter that transmits part of the light from the single-mode waveguide" (col. 21, lines 14-25). "A reflector that reflects the light transmitted by the band pass filter and feeds this light back to the active layer of the semiconductor laser" (col. 21, lines 14-25). "Wherein the oscillation mode of the semiconductor laser is limited by the light that has been fed back" (col. 17, lines 40-55).

17. **Regarding claim 33**, Bischel discloses, "Wherein the band pass filter is formed integrally with the single-mode waveguide as a Bragg reflection grating" (col. 21, lines 14-25).

18. **Regarding claim 34**, Bischel discloses, "Wherein the single-mode waveguide is composed of a nonlinear optical material and has a periodic polarization inversion structure" (col. 9, lines 38-56). "Part of the light from the semiconductor laser is

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subjected to wavelength conversion by the polarization inversion structure" (col. 9, lines 38-56).

19. **Regarding claim 35**, Bischel discloses, "A wide stripe semiconductor laser including a Bragg reflection grating" (col. 17, lines 23-25). "A tapered waveguide having an incident end face to which light from the semiconductor laser is coupled" (Fig. 8). "A single-mode waveguide formed on the exit end face side of the tapered waveguide" (col. 18, lines 30-35). "A reflector that reflects part of the light from the single-mode waveguide and feeds this light back to the active layer of the semiconductor laser" (col. 21, lines 14-25). "Wherein the oscillation mode of the semiconductor laser is limited by the light that has been fed back" (col. 17, lines 40-55).

20. **Regarding claim 36**, Bischel discloses, "Wherein the single-mode waveguide is composed of a nonlinear optical material and has a periodic polarization inversion structure" (col. 9, lines 38-56). "Part of the light from the semiconductor laser is subjected to wavelength conversion by the polarization inversion structure" (col. 9, lines 38-56).

21. **Regarding claim 38**, Bischel discloses, "Wherein the lateral mode of the semiconductor laser is substantially fixed to single-mode oscillation by feedback light" (col. 17, lines 40-55).

22. **Regarding claim 42**, Bischel discloses, "Wherein the lateral mode of the semiconductor laser is substantially fixed to single-mode oscillation by feedback light" (col. 17, lines 40-55).

***Claim Rejections - 35 USC § 103***

23. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

24. Claims 26, 27, 28, and 30 rejected under 35 U.S.C. 103(a) as being unpatentable over Bischel.

25. **Regarding claim 26**, Bischel does not disclose, "Wherein the wavelength selecting filter is constituted by a volume grating." It would have been obvious to one of ordinary skill in the art at the time of invention to use a volume grating since it was known in the art that a volume grating may advantageously be utilized in cases where it is desirable to have a wavelength selective reflector.

26. **Regarding claim 27**, Bischel does not disclose, "Wherein the wavelength selecting filter is a fiber grating." It would have been obvious to one of ordinary skill in the art at the time of invention to use a fiber grating since it was known in the art that a



fiber grating may advantageously be utilized in cases where it is desirable to have a wavelength selective reflector.

27. **Regarding claim 28**, Bischel does not disclose, "Wherein the wavelength selecting filter is formed integrally with the semiconductor laser as a Bragg reflection grating." It would have been obvious to one of ordinary skill in the art to integrate Bragg grating with semiconductor laser, since it has been held that rearranging parts of an invention involves only routine skill in the art. In re *Japikse*, 86 USPQ 70.

28. **Regarding claim 30**, Bischel does not disclose, "Wherein the mode converter is a tapered fiber." It would have been an obvious matter of design choice to use a tapered fiber, since applicant has not disclosed that this difference solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with a tapered waveguide.

29. Claims 37 rejected under 35 U.S.C. 103(a) as being unpatentable over Bischel in view of Arnone et al. (Arnone, US Patent 6,388,799).

30. **Regarding claim 37**, Bischel does not disclose, "Wherein the exit end face of the single-mode waveguide has a dichroic mirror that transmits fundamental waves and transmits higher harmonic waves." Arnone discloses, "Wherein the exit end face of the single-mode waveguide has a dichroic mirror that transmits fundamental waves and

transmits higher harmonic waves" (col. 21, lines 32-34). It would have been obvious to one of ordinary skill in the art at the time of invention to combine the teachings of Bischel with the teachings of Arnone. The dichroic mirror of Arnone would enhance the teachings of Bischel by allowing wavelength selective outcoupling.

31. Claims 39, 40, 41, 43, 44, and 45 rejected under 35 U.S.C. 103(a) as being unpatentable over Bischel in view of Brodsky et al. (Brodsky, US Patent 6,489,985).

32. **Regarding claim 39**, Bischel does not disclose, "Wherein light from the coherent light source is converted by the optical system into a two-dimensional image." Brodsky discloses, "Wherein light from the coherent light source is converted by the optical system into a two-dimensional image" (col. 10, lines 17-46). It would have been obvious to one of ordinary skill in the art at the time of invention to combine the teachings of Bischel with the teachings of Brodsky. The optical system of Brodsky would have been a suitable use for the laser system of Bischel. The selection of something based on its known suitability for its intended use has been held to support a prima facie case of obviousness. *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

33. **Regarding claim 40**, Bischel does not disclose, "Wherein the image conversion optical system has a two-dimensional beam scanning optical system." Brodsky discloses, "Wherein the image conversion optical system has a two-dimensional beam

scanning optical system" (col. 10, lines 17-46). It would have been obvious to one of ordinary skill in the art at the time of invention to combine the teachings of Bischel with the teachings of Brodsky for the reasons given above regarding claim 39.

34. **Regarding claim 41**, the combination of Bischel and Brodsky does not disclose, "Wherein the image conversion optical system has a two-dimensional switch." It would have been an obvious matter of design choice to include a two-dimensional optical switch, since applicant has not disclosed that this difference solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with standard scanning means.

35. **Regarding claim 43**, Bischel does not disclose, "Wherein light from the coherent light source is converted by the optical system into a two-dimensional image." Brodsky discloses, "Wherein light from the coherent light source is converted by the optical system into a two-dimensional image" (col. 10, lines 17-46). It would have been obvious to one of ordinary skill in the art at the time of invention to combine the teachings of Bischel with the teachings of Brodsky for the reasons given above regarding claim 39.

36. **Regarding claim 44**, Bischel does not disclose, "Wherein the image conversion optical system has a two-dimensional beam scanning optical system." Brodsky discloses, "Wherein the image conversion optical system has a two-dimensional beam

scanning optical system" (col. 10, lines 17-46). It would have been obvious to one of ordinary skill in the art at the time of invention to combine the teachings of Bischel with the teachings of Brodsky for the reasons given above regarding claim 39.

37. **Regarding claim 45**, the combination of Bischel and Brodsky does not disclose, "Wherein the image conversion optical system has a two-dimensional switch." It would have been an obvious matter of design choice to include a two-dimensional optical switch, since applicant has not disclosed that this difference solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with standard scanning means.

### **Conclusion**


38. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sean Hagan whose telephone number is 571-270-1242. The examiner can normally be reached on Monday-Friday 7:30 - 5:00.

39. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun O. Harvey can be reached on 571-272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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40. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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**MINSUN OH HARVEY  
PRIMARY EXAMINER**